Southwestern Medicine

Volume II El Paso, Texas, November, 1918 No. 11

X-RAY DIAGNOSIS OF PATHOLOGICAL CONDITIONS IN THE LUMBOSACRAL SPINE.

BY

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(Read before the 27th Annual Session of the Arizona Medical Association, Phoenix, April 25-26, 1918.)

Among the many obscure symptoms which the clinician is called on to diagnose and treat, none are quite so baffling as those which arise from disease of, or injury to, the lumbosacral and sacroiliac articulations. This is because these symptoms are usually out of all proportion to the demonstrable pathology, and because treatment of them is so notoriously unsatisfactory.

Investigation of the pathology of this region has met with many difficulties, not the least of which has been the skepticism of the medical profession as to the possibility of demonstrating abnormalities here, and their tacit acceptance of the fallacy, now made sacred by age, that profound symptoms can result from slight or no anatomical changes in the lower spine. It is remarkable how little and what cursory investigation the pathology of this region has received, when we consider the industrial importance, as well as the clinical frequency, of the disability resulting therefrom. Goldthwaite's work in this country and the monograph of Els, from abroad, report some of the really serious work, and have the saving grace of attaching importance to the underlying pathology and not to the spectacular and unsatisfactory surgery which has been advocated. Roentgenologists have paid more attention to the investigation of the lower spine than clinicians and surgeons have, and the normal variations of the lower spine are now definitely established. The many technical difficulties attached to the x-ray examination of the lower spine have been overcome, also, and we can now show clearly any of the bones of this region in two directions.

By recalling the anatomy of the lumbosacral spine, it will easily be seen that profound injuries may occur in some cases with very slight

symptoms, while very mild changes may produce far reaching effects in other cases. This is due to the individual variations in size, shape and relations of the fifth lumbar vertebra and its processes. The essential structures of the spine lie within the canal (whose integrity is preserved by the vertebral arches), and issue forth through the intervertebral foramina. As long as the canal and the foramina are intact, serious symptoms will not result, but the moment the canal space or intervertebral space is encroached upon, the cauda equina or large nerve trunks are in danger. So, we often see the body of the fourth or fifth lumbar crushed without bad functional results; the fifth lumbar may even be entirely dislocated forward—as in spondylolisthesis—without serious results. On the other hand, a hypertrophic arthritis, rotation of the fifth lumbar, absorption of the disc so that the transverse processes sink down upon the wing of the sacrum, may cause profound symptoms. An understanding of the mechanics of the lumbo-sacral joints, and knowledge of the distribution of the nerves coming out of the spine in this region, are necessary to a proper appreciation of the symptoms resulting from lumbo-sacral injury or disease. For the purpose of this paper, such anatomical knowledge must, in great measure, be presumed, altho a brief quotation from Goldthwait and one or two points in the nerve distribution will be emphasized.

"The lumbosacral joint is capable of considerable motion, fully one-half of the motion of the trunk below the dorsal region being made in this articulation and the one just above it, the remainder being distributed between the rest of the lumbar spine and the sacroiliac joints. In forward bending, since the bodies of the vertebrae are so large the motion at the lumbosacral joint is made partly by the changes in the intervertebral discs, but chiefly by the articular processes of the fifth lumbar vertebra sliding upward upon the opposing processes of the sacrum. Naturally, if the motion is carried too far, the articular processes will be separated posteriorly, and the vertebra can then slip forward on the sacrum.

"If the displacement of the fifth lumbar or the separation of the articular processes takes place only on one side, a much more serious condition at once results. The displaced articulation slides forward and to the outside, with the result that the whole spine, with the body of the fifth lumbar, is rotated forward on the side of the displacement."

Goldthwait lays great stress upon the narrowing of the spinal canal and compression of the cauda equina. Els, in his classical article, considers the compression of the lumbosacral cord or its involvement in bony changes to be of greater importance. The cases which we have had the opportunity to investigate have more nearly approached the pathological conditions described by Els.

The lumbosacral cord is the principal trunk of the sacral plexus; after emerging from the spinal canal through the invertebral foramen, it unites with a branch from the fourth lumbar, passes beneath the transverse process and across the smooth upper surface of the sacrum and dips into the pelvis. It requires only a casual inspection of an articulated spine to see what slight changes in space is needed to bring this cord into jeapordy, especially if the foramen is limited by anatomical peculiarities. Before the lumbosacral cord joins with the sacral branches to form the great sciatic, three branches are given off—the muscular, the superior and inferior sciatics; these supply the pyriformis, the obturator internus and the three glutei muscles. Consequently when we suspect compression of this cord, we should always look for effects upon these muscles. After these branches are given off, the lumbosacral cord becomes merged with the other branches of the plexus to form the great sciatic nerve. Compression of the lumbosacral cord where it crosses the sacrum or closes to the spine may produce paralytic, trophic or sensory symptoms anywhere along the distribution of the great sciatic.

The normal lumbosacral spine, in the male, shows considerable variation, due to differences in thickness and angulation of the fifth lumbar. The female spine does not vary so widely.

Aside from the normal variations in the lumbosacral spine, there are developmental anomalies which, in themselves, are not to be considered pathological, yet render the spine more susceptible to injury and lead to compensatory changes which may cause symptoms. While the fifth lumbar may vary widely in thickness, size of processes, and angle with the sacrum, it is necessary that the foramen on each side remain free and unobstructed. Any change which cramps the foramen of exit of the lumbosacral cord or which bring the transverse processes into interference with the wing of the sacrum or the ilium, cannot be considered normal. Els calls attention to several things which it is well to bear in mind; one is that the spine undergoes a gradual development, culminating in the stage of complete ossification toward the end of the third decade; from this time on, the intervertebral discs undergo a gradual thinning and the arches and transverse processes a corresponding hypertrophy; another point is that lumbosacral injuries usually occur in men of powerful physique on account of the anatomical pecularities of their lower spine; a third point is that developmental anomalies of the fifth lumbar and first sacral arches have an important bearing on the pathological changes in this region from disease and injury.

Among the anomalies which have a more or less important bearing on symptoms, either as the result of developmental changes or by way of predisposing to traumatic pathology, may be mentioned: (a) spina bifida

occulta; (b) sacralized transverse processes, or synchondrosis between the process and the sacral wing; (c) extremely deep-seated fifth lumbar with long transverse processes lying close to the sacrum; (d) acute angulation between the fifth lumbar and the sacrum.

A spina bifida occulta may exist without symptoms, and is frequently seen as an accidental finding on plates taken for other purposes. However, it may be of importance in several ways; according to Els, the cauda equina may be involved in adhesions by the extension of fibrous connective tissue through the cleft; again, there may be, and usually is, a compensatory hypertrophy of the transverse processes, in an endeavor to brace a weak place in the bony trunk; this hypertrophy usually occurs in the process accessorius which extends down and rests upon the sacrum, where it may become fused, or form an articulation with the sacrum; in the third place, an arch which is weakened by such a defect is more likely to be fractured by direct or indirect violence. The spina bifida may involve the fifth lumbar arch or the first sacral arch, or both; more frequently the sacral arch is split.

A sacralized transverse process is frequently seen and, in itself, is of no great significance. However, if this is associated with a synchondrosis between the opposite process and the sacral wing, we have a condition which can hardly help causing trouble sooner or later. Such a condition was shown in the radiograph of a case where excruciating pain was produced by forcible lateral bending. Another case in which persistent pain was explained by bursitis of such a false joint, just as described by Goldthwait. On the other hand, the sacralized process may predispose to dislocation of the opposite articular process, by fixation of the ankylosed side and forcible prying apart of the articular processes of the other side. I have not seen this accident, but Els describes it.

The deep seated transverse process, which closely hugs the base of the sacrum presents conditions which require very slight changes in relations to produce compression of the lumbosacral cord. If the intervertebral disc is crushed, if the inferior articular processes are fractured, if the articular process of one side is disarticulated, or a hypertrophic arthritis produced by any cause, the foramen is almost certain to become narrowed and symptoms of nerve compression result.

In the acute angulation between the fifth lumbar and the base of the sacrum, we have a potential spondylolisthesis; any injury which tends to drive the fifth lumbar forward will throw a strain on the ligaments and spinal muscles, producing pain. When the fifth lumbar slips forward, the arch is thrown upward, the transverse processes slip forward and downward and the lumbosacral cord may be compressed. We have seen one case of pure spondylolisthesis.

During the past two years, we have made 127 examinations on 116 patients for suspected injury or disease in the lumbosacral region. Of these 116 cases, no pathological shadows could be demonstrated in the lumbosacral spine of thirty-five.

In thirty, arthritis or spondylitis of the lumbosacral spine was shown, in fifteen of whom tuberculous spondylitis was diagnosed.

In thirty, sacrailiac arthritis was demonstrated, ten of these being tuberculous.

In thirteen, traumatic changes were demonstrated.

In eight, development anomalies, without other evidence of pathology, were shown.

One case showed removal of transverse processes by operation.

Twenty-seven of the 116 cases had suffered trauma to the back and claimed symptoms as the result of this trauma.

In five of these 27 cases, no pathology could be shown.

In three cases, no lumbosacral changes were found, but spinal injuries higher up were demonstrated.

In five, a lumbosacral arthritis was shown, all the evidence being against traumatic origin. One of these cases had a rather marked spina bifida occulta of the first sacral arch.

One case had an anomaly which evidently was the cause of the pain, produced by forcible lateral bending.

In thirteen cases, there were demonstrable lesions of the lumbosacral spine compatible with the history of the injury and which would explain the symptoms complained of.

There were five cases of complete or partial forward dislocation of the fifth lumbar vertebra, with or without fracture.

There were three cases of unilateral injury to the articular processes, resulting in rotation of the fifth lumbar on its vertical axis. This is a more serious injury than the previous one, as emphasized by Goldthwait.

There was one case of crushing of fourth lumbar with very slight symptoms resulting.

There were two cases of transverse fracture through the fifth lumbar, one showing very slight symptoms and the other very pronounced symptoms.

There was one case of fracture across the sacrum between the second and third bodies, with arthitis and painful symptoms as final result.

There was one fracture of the wing of the sacrum.

Permanent symptoms as the result of "strain" of the sacroiliac joint we do not believe has any basis in pathology and this diagnosis has been, simply, a confession of ignorance and of an unwillingness thoroughly to investigate the actual cause of the symptoms. After we have exhausted all possible methods of demonstrating anatomical changes and the causes thereof, and have failed to show anything more than normal bones and joints, we should have the courage of our belief and say that no pathological changes exist and hunt elsewhere for the causes of the symptoms, even to seeking them in the imagination of the patient. In our series we have seen sacroiliac and lumbosacral symptoms explained by retrocecal appendices, ureteral stones, the familiar fatigue pain of Cabot, and injury to the pubic bones. Traumatic separation of the pubic bones does, by the way, produce a real "strain" of the sacroiliac joint.

THE INFLUENZA PANDEMIC.

By
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While it is perhaps too early to view the present influenza pandemic in its true perspective there have already developed both new and interesting points worthy of mention. On reviewing the literature of previous pandemics we are forcibly impressed with the fact that the present one with all its protean characteristics presents nothing new. The same complications, the same unusual pneumonias have characterized the disease for centuries past, and have been the subjects of discussion during every pandemic since the days of Sydenham. A higher pneumonia morbidity alone with its consequent high death rate has been emphasized in the present pandemic till its virulence seems to exceed any other of recent times. Many of us remember the epidemics of 1890 vividly enough to testify on this point. While statistics of the past give about 75% of respiratory forms, this proportion must rise to nearly 90% at the present time, and the pneumonia morbidity of 1% in 1890 seems now to be 10 times as much. In considering this increased virulence one wonders whether the world war may be in any way responsible. It is a well known bacteriological principle that the virulence of disease organisms is increased by passing them in rapid succession through several animal bodies. With a large proportion of the younger, susceptible manhood of the world mobilized in army camps where the influenza germs can pass rapidly from one to another, it seems only reasonable to expect that its virulence will be increased.

During the 18th and 19th centuries great pandemics of influenza have occurred on an average of once in 25 years. Epidemics involving

a city, state or continent have occurred at various intervening times. Epidemics spread over the world following lines of communication and do not exceed the rapidity of modern conveyance. Army camps and the large cities are affected first, later smaller places and the rural population. The disease is not air borne, but is transferred chiefly from person to person, though it may be carried by a third person or by fomites. The organism cannot be cultivated from dry sputum after 40 hours.

Immunity produced by the disease is variable. The rule seems to be that about 90% of those affected remain immune. In epidemics recurring at short intervals the aged suffer less. This is noticeable at the present time since many of us above the 4th decade were attacked during the epidemics of 1890, '92 and '94. Yet repetitions are common. In 1890 about 40% of the doctors of certain cities were affected. In the recurring epidemics of the next 4 years 5% were again attacked while 5% of those unattacked in 1890 were later affected. During the same pandemic which came 43 years after the preceding one, many older people suffered. The incidence of influenza is fairly definite. It can be figured that about 40% of the population will be affected; largely in the first four decades of life. Physicians report approximately 18,000 cases in El Paso. A reasonable addition for mild cases and those not seen by physicians would mean that probably 35% have already been affected. Exposure to infection plays an important role. Nurses, physicians, assistants and help in institutions, overseers of labor and travellers show a high percentage. People in absolute isolation as lighthouse tenders not in communication with ship or shore, do not take it.

The bacteriology of this disease which was apparently cleared up during the epidemics of 1892-94, is again questioned, and the statement is now even made that the disease is of unknown bacterial origin. The Pfeiffer bacillus is notoriously difficult to cultivate and stain, and when it is considered that streptococci, diplostreptococci, pneumococci, staphylococci, M. catarrhalis, the Friedlander bacillus and other organisms have been found growing apparently in symbiosis with it, the difficulties of isolation and detection can be appreciated. The influenza bacillus has been isolated from 88% of all cases at Camp Mills, while the pneumococcus was the predominating organism found in the pneumonias.

It is not our intention to enter into a general discussion of influenza but rather to touch upon interesting or unusual features and add a few local statistics. Interest in the disease centers largely in the pulmonary findings. The hyperemia of the bronchial mucous membrane together with a sero-purulent exudation extending into the bronchioles and even the air cells produces a bronchitis with variable signs giving manifold auscultatory phenomena. When we consider the added changes in the blood and surrounding lung tissues produced by mixed infection we can

readily understand the pathology, varying from miliary to lobular or lobar consolidation, atelectasis, pulmonary abscess or gangrene, and in severe cases the patient being suffocated by his own secretions, and his heart and nervous system overwhelmed by the violent toxemia. A point of note is that in adults usually the lower lobes alone are involved except in the bronchopneumonias or where there has been an antecedent tuberculosis, bronchitis or asthma. The most frequent pulmonary finding in this epidemic has been an area or areas of fine crepitant or sub-crepitant rales varying in size from the bell of a stethoscope to a whole lung or both lungs. The most frequent location has been in the mid-axillary line from the 6th to 10th ribs or along the lower border of the lungs, but may occur any where, even in the apices. Bronchitis merges into broncho-pneumonia so gradually that there is no line of demarcation, nor can the diagnosis be made at the bed-side with any degree of certainty. The initial influenza temperature may run as high as 105, resists antipyretics and gradually drops to normal in 3 to 5 days. If a high temperature persists after 3 or 4 days pneumonia should be suspected, even though it may not be located. With high fever, rapid pulse, and respiration, marked prostration and the presence of rales, one is justified in diagnosing broncho-pneumonia in the absence of signs of consolidation. Typical prune juice sputum probably means a considerable area of hepatization. Blood streaked sputum does not mean a pneumonia but occurs in many cases of bronchitis having the severe paroxysmal cough, as well as in cases of tuberculosis that light up under the irritation.

Among approximately 2865 cases treated by 10 El Paso physicians there were reported 119 cases of lobar pneumonia and 223 broncho-pneumonias with a total mortality of 94 or 27%. The mortality rate of each physician was as follows: 45%, 7%, 42%, 35%, 12%, 24%, 0, 30%, 50%. As the physicians having low death rates have a relatively large number of broncho-pneumonias it seems probable that they have listed as pneumonia cases that others have called bronchitis. Statistics of 1890 epidemics give mortality rates varying from 17% to 45%, which would further confirm the conclusion. Furthermore, with one exception, these same reports give no cases of bronchitis with bloody expectoration, inclining one to the conclusion that all cases having bloody expectoration, were called pneumonia. Since it is known that cases almost afebrile throughout their sickness and without bloody expectoration have at autopsy presented well developed pneumonia there is obviously no way of proving at the bedside that a certain case is broncho-pneumonia or is bronchitis only. The mortality rate is probably the best indication as to the correctness of the diagnoses.

The influenza pneumonias present several points of difference from the ordinary pneumococcic type. 1. The pneumonia usually comes on in-

sidiously, without a chill, between the second and sixth days of the influenza. Not infrequently it comes as a relapse after the patient has been up and about for some days.

2. Almost all of those cases have marked redness of the skin, which in the severe cases soon passes into cyanosis. In a few of these much cyanosed cases the streptococcus haemolyticus has been found but the proportion is not sufficient to remove suspicion from the influenza bacillus as the chief cause.

3. One is struck by the absence of pleural pain, as well as the absence of physical signs of pleurisy. A considerable proportion of these cases light up a severe dry pleurisy during convalescence and out of the 350 reported cases of pneumonia and 61 cases of pleurisy, 6 developed empyema.

4. A striking feature in the very sick pneumonias is the type of respiration. Instead of the labored breathing that we are accustomed to see, the respiration is shallow and often abdominal rather than thoracic. On watching it one cannot but feel that the respiratory center is benumbed by the intoxication.

5. The physical signs are different. In many cases classed as lobar pneumonia the percussion note is not as dull as we would expect, tactile and vocal fremitus are less marked, broncho-vesicular breathing is more common than bronchial breathing and is more frequently accompanied by rales. Another striking feature is that while one part of the lower lobe may show bronchial breathing another portion may have entire absence of breath sounds. This is apparently due either to an area of atelectasis or to plugging of a bronchial tube, probably the latter in most instances. Watching the respiration often shows that the base of a lung that has diminished breath sounds also has a diminished expansion.

6. An unusual number of the influenza pneumonias have shown delayed resolution, at times complete failure to resolve, particularly in the apex of the lower lobe. Some cases after going back to work still have an area of bronchial breathing free from rales.

There has been a variety of mixed and atypical cases. The most striking has been a respiratory type lacking the usual symptoms. In my list were 4 or 5 afebrile cases that had headache and aching, with dyspnea, but no cough. On examination a whole lower lobe showed absence of breath sounds so complete that it probably could be produced only by plugging of a larger bronchial tube. There was no dulness to indicate fluid and the cases have cleared up in about 10 days. Another small number of cases have presented marked signs of moisture in the lung without cough or other respiratory symptoms. Some of these areas have been the seat of pneumonia in previous years.

In the reports of 2865 cases above mentioned were 127 cases of bronchitis with bloody expectoration; 32 cases of tuberculosis made active or with bloody expectoration; 32 cases of tuberculosis made active or pleurisies; and 6 empyemas. This epidemic has been remarkably free from complications of the ears, nose and throat. Contrast with this our local epidemic 2 years ago this winter, when the ear and nose specialists were overworked. Among 106 cases of the nervous form of influenza there were 84 cases of delirium; 23 comas; 26 with meningeal symptoms; and 7 meningitis; all of the latter having died. Of 102 gastro-intestinal cases reported 28 had colic, 33 severe diarrhoea, and 22 bloody diarrhoea. There were 9 cases of endocarditis and 3 of phlebitis.

Of 578 deaths reported by the El Paso health department for October there were 180 due to influenza and 266 pneumonia with influenza the contributory cause. These deaths by decades are approximately as follows: first, 143; second, 48; third, 113; fourth, 86; fifth, 37; sixth, 8; seventh, 6; and above 70 only 1. Of the total number 31% were Americans, 66% Mexicans and 3% negro. The high mortality among Mexican children is no doubt responsible for an unusual number in the first decade, 111 of these being under 5 years of age.

With a serious pandemic approaching much thought was given to prophylaxis. Nothing has been found of value with the possible exception of masks and vaccine. Masks have but little favorable mention in current literature and vaccines are in the experimental stage. Of 897 cases in our local reports that received 2 or more injections of vaccine 59, or less than 7%, developed influenza. Of these 6 cases, or 10%, developed pneumonia and 3 died. The impression seems to prevail that the cases after vaccination have been milder in spite of the fact that the usual 10% developed pneumonia. Meanwhile the field is open for further work and we await the U. S. Army reports which will be valuable in case epidemics recur as they probably will in the near future.

The treatment of influenza is chiefly the treatment of its serious complications, of which 95% are pneumonia. If one is in position to determine the type of pneumococci present the corresponding serum may be used though little or no results have been obtained from serums in influenza. And, as Mix says, by the time the pneumonia is typed the patient is usually either dead or convalescent. None of the many new remedies advocated have proved of any value. The treatment of these pneumonias is as usual the combined effort to keep the toxemia at the lowest possible level and to support the heart. The cases of meningitis should have the spinal fluid examined as they are usually of the ordinary epidemic variety.

THE INFLUENZA PNEUMONIA PANDEMIC IN THE AMERICAN ARMY DURING SEPTEMBER AND OCTOBER, 1918.

(Published in SCIENCE for November 8, 1918, with permission of the Surgeon General of the U. S. Army, by George A. Soper, Major, Sanitary Corps, U. S. A.—Reviewed by Editor.)

This is the second large epidemic that has occurred in this country this year, the first being in the spring, 1918. From September 12 to October 18, inclusive, there were reported 274,745 cases of influenza among the troops in this country, with 46,286 cases of pneumonia and 14,616 deaths. The first report of a serious epidemic among soldiers came from Devens, at Ayer, Mass. He calls this the most infectious of all communicable diseases. Its spread is never slow, but always very rapid. The disease is carried from place to place by persons, and its rapidity of spread is due to its great infectivity, short period of incubation, missed cases and absence of timely precautionary measures. "The causative agent is believed to be the bacillus of Pfeiffer." We do not know the factors that increased the virulence of the particular strain of the organism that caused this great pandemic. The belief that immunity is conferred by previous attacks is partly confirmed. The epidemics that occurred this spring were like those now taking place except that the disease was milder and there was less pneumonia. "Something seems to have occurred during the summer greatly to increase the virulence of the disease. During July and August a number of vessels plying between Europe and America experienced intense outbreaks of influenza, accompanied by very fatal pneumonia. That cases of the disease were being brought to this country in this manner was stated in the daily press and in official reports in July."

In 1889-90 between 25 and 50% of the population at large was attacked. In 1872 three-quarters of the population of London suffered.

INFLUENZA DATA.

Prophylactic vaccine efforts against Influenza as yet remain in an embryo state. This statement is made advisedly. Personal observation would indicate that properly selected, combined, Influenza vaccines used, previous to infection has a prophylactic place. Many medical men locally working, condemned colleague results, reasoning from improper personal methods.

Sero-Bacterins, instead of plain, combined vaccines were tried by them, and tried in an inefficient manner. Primary injections of four to five minums were used, serially repeated in two to three days, up to four doses.

Sero-Bacterins in the writer's observations only have a place in post Influenza treatment, during that stage of cough and chest pains that occur subsequent to temperature drop. Different laboratory products vary markedly, as to quantity of dead bacteria content. Some contain only to the C. C. 100-million Pfeiffer, 100-million Stapp. Aurens and Albus, 40-million Micrococci Catarrhalis, 100-million Pneumococci, and no menon is made as to the polyvalent nature of those.

The vaccine that gave the writer the results was administered in I. C. C. dosage, such quantity containing 100-million Pfeiffer, equal quantity of Micro. Catarrhalis, Bacilli of Freidlander and Streptococcus Pyogenes.

One hundred and ninety-two individuals were vaccinated by the writer, four of these developed mild Influenza attacks. All four of these developed the disease within the incubative stage, one within ten hours, one case thirty-six hours, one case forty-eight hours, and one case seventy-two hours. This brings the development of the attack within the prodromal period of Influenza. The reactions from the injections, local, focal and general, were negative, provided that manifestations of the trouble were not showed within twenty-four hours.

The Sero-Bacterin which was used when the inability to secure the pure vaccine occurred, developed marked local and general symptoms. With these observations and a realization of the gravity of the epidemic, I would repeat the general advice given patients, should Influenza again appear, namely, have a combined influenza vaccine administered.

—HUGH CROUSE, M. D.

SOME POINTS ON INFLUENZA

1. The bacillus of influenza is not found in all cases, and there is a growing opinion among experts that this organism is not the cause of the disease.

2. The cause of the complicating pneumonia is not known. Is it due to the cause of the influenza or to one or more of the other pathogenic organisms present, that have taken on greatly increased virulence?

3. The disease is spread in all probability not only by individuals in the active stage of the disease, but also by carriers, both those who have had it and those who have not.

4. The present great epidemic in this country is an extension of that which has recently devastated Europe.

5. In July and August vessels running between this country and

Europe suffered epidemics of influenza complicated with pneumonia; evidently the same type of the disease we have had here recently.

6. These cases, evidently in the active stage, were admitted into this country, but were probably not the cause of this great epidemic, as it did not begin until September.

7. Even if these active cases had been rigidly kept on board ship, the epidemic would have occurred anyway, as carriers could neither have been detected nor excluded from the country.

—E. C. P.

INFLUENZA IN THE SANATORIUM.

By

R. B. HOMAN, M. D.

It is interesting to note that comparatively a small number of patients in the tuberculosis sanatoria had influenza during the epidemic through which we have just passed.

In the Homan Sanatorium, El Paso, only three of seventy-five patients had influenza and one of these developed the disease the day following her admission into the institution. None of the three had pneumonia. Of the thirty-five employees eight had the disease, and one of these had pneumonia.

We attribute the low morbidity with the patients to two things: First, tuberculous people usually show pneumococci, staphylococci, micrococcus catarrhalis, etc. in their sputum, showing that a mild infection with these organisms is usually present in most all patients, thus producing a degree of immunity which protects them to some extent against a frank invasion by any of these infections.

Second: From the time the prevalence of the epidemic of influenza was announced we began the administration of influenza vaccine to all the patients.

The one patient who developed the disease the day following her admission had not received vaccine. The other two had, and the disease was mild. Among the employees, five of those having the disease had received vaccine. The one who had pneumonia and succumbed to the disease had not. We may add that these five, two nurses, two physicians, and the manager of the institution, were exposed to the first case among the employees, which was not recognized as influenza until three or four days after the onset, this being one of the first cases in the city, and none of these received any vaccine until three or four days after exposure to infection.

EDITORIAL FROM THE SCIENTIFIC AMERICAN OF NOVEMBER 2, 1918.

A Carelessly-Guarded Gate.

There is a growing conviction that the sudden invasion of the United States by that European epidemic known as Spanish Influenza, and the speed with which it has spread throughout the country, are due to the laxity with which the port authorities along the Atlantic seaboard have carried out their duties. This carelessness would have been inexcusable at any time; and it is doubly so just now, when the activities of the country should be organized for dealing promptly with every possible emergency.

If ever there was a period when the quarantine laws for guarding the ports of the United States against the entrance of disease should have been enforced with redoubled vigilance, it was during the summer and autumn of the present year, when it was known that a highly infectious and fatal disease was sweeping through Europe like a scourge of the middle ages.

In view of the imminence and deadly character of the disease, we had every reason to expect that the Federal authorities would set a double guard at our ports of entry, and instruct our quarantine officials to take every possible preventive measure against the landing, not merely of influenza patients, but of every passenger who had been exposed, during the ocean voyage, to infection.

Nor can any carelessnes be excused on the ground that influenza has never been classed with the deadly diseases, such as yellow fever or the bubonic plague. While such an excuse might be valid for the layman, it cannot be allowed in the case of the expert professional men, whose duty it is enforce the quarantine laws of the country. For they know full well that this was no ordinary epidemic of influenza or grip. The medical records of Europe were available; and the most cursory reading of the data that has appeared in the medical journals (to go no farther than that), should have revealed to these men that here was a disease, the exclusion of which from America called for the most exacting and rigid enforcement of the quarantine laws.

The obvious thing to have done, when the first ship with influenza patients on board cast anchor at a quarantine station, was to isolate that ship, with every soul on board, until the slightest possibility of carrying infection ashore had been removed. The rigid precautions that would be taken, if an arriving ship had yellow fever patients aboard, should surely have been taken in the case of this deadly scourge.

But what are the facts? Incredible as it may seem, influenza cases by the score and, for all we know, by the hundred, were taken ashore and placed in the general wards of the hospitals. Fellow passengers of the patients, who must inevitably have been exposed to infection, and must many of them have been carrying the disease, were allowed to go their several ways throughout the land.

Was ever official fatuity stretched to greater lengths than this!

When once the ship's company had scattered, whether to spread the infection among fellow patients in a general hospital, or among the unsuspecting and unwarned citizens, in home, office, passenger car, or theater, the mischief was done. But even when the plague burst forth in all its widespread malignity, both New York and the country at large seemed slow to awaken to the enormity of the peril. Only here and there did the authorities act with swift and effective measures, closing schools, theaters, and public meeting places, in the effort to prevent the further spread of the disease.

It is certainly a disconcerting fact that, at the very time when the country has organized itself, through the Red Cross and other famous organizations, to fight disease and prevent suffering, we should be smitten with a visitation which is causing more casualties and deaths in the homeland, than are occurring among our troops in the great world war.

Southwestern Medicine

Volume II El Paso, Texas, November, 1918 No. 11

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Annual Subscription $2. **Members $1.** **Single Copies 25 Cents.**

Entered at the Postoffice at El Paso, Texas, as second class matter.

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EDITORIALS

THE INFLUENZA EPIDEMIC IN ARIZONA.

The epidemic of influenza, which is still raging in Arizona when this is written (Nov. 7th), is of a very severe type. Some lessons have already been learned, at great cost, and others will be brought home as the epidemic subsides.

The disease entered Arizona along the northern line of the Sante Fe Railroad, spreading from Gallup, N. M., where the infection was particularly virulent, to Holbrock, Ariz., and adjacent country. In Winslow, there were a few cases, until a circus came to town and everybody went to the show. A week later there were 500 cases in that town of not more than 1500 people. Dr. O. H. Brown, the State Supt. of Health immediately went there and took charge, securing some aid from California and Phoenix. Emergency hospitals were established and an attempt made to control the disease through sanitary measures and vaccination.

Through the Voluntary Medical Service Corps, physicians were sent to Winslow, Holbrook, St. Johns, Snowflake, and neighboring towns.

Dr. Thos. Caldwell, the only physician at Springerville, died with the disease early in the epidemic; Dr. J. W. Bazelle of Holbrook, the only physician in that town, was taken sick, and soon afterwards, Dr. F. W. Brown, the only physician at St. Johns, was taken ill with the malady. Drs. Allen H. Williams and H. P. Mills were in service at Winslow, with a doctor from California. Dr. W. W. Wilkinson spent two weeks at Holbrook. Dr. A. J. McIntyre went to Snowflake. Dr. H. A. Hughes went to St. Johns, and is still working in the northern part of the state. These men, later supplemented by Dr. F. H. Redewill and Dr. Geo. W. Vickers, with Dr. Harry of Stockton have endeavored to supply the need for physicians in the northern part of the state. These men were given temporary commissions in the Public Health Service, and have worked under the direction of Dr. Brown, the State Superintendent of Public Health of Arizona.

Other sections of the state have suffered greatly, but have managed to care for their own sick. Emergency hospitals have been necessary in every town and city of any size in the state.

In Phoenix, Drs. F. H. Stafford and P. R. Doron contracted the disease and gave up their lives, both developing virulent type of pneumonia and succumbing after a few days.

MEETING OF HEALTH OFFICERS.

A meeting of the city and county health officers of Arizona was called by Dr. Orville H. Brown, State Superintendent of Health, and held on November 9th, in the office of the Governor, in Phoenix. The object of this meeting was to decide upon some uniform method of handling the quarantine questions raised by the influenza epidemic. There were present at the meeting the following officers:

Dr. A. B. Nichols Maricopa County.
Dr. H. K. Beauchamp, Phoenix.
Dr. L. A. W. Burtch, Greenlee County.
Dr. J. H. Lacy, Miami.
Dr. D. N. Schulman, Tucson.
Dr. C. E. Rooney, Yuma County.
Dr. H. K. Wilson, Coconino County.
Dr. C. D. Jeffries, Williams.
Dr. H. P. Mills, Phoenix.

Rules regulating the opening of schools, churches and theaters were formulated, and other methods of combatting the disease were discussed.

Reports from the different sections of the state showed that the epidemic has been very severe in almost every part of the state, and has taxed the health officials, as well as the practicing physicians, almost beyond their capacity. —W. W. W.

THE SCIENTIFIC AMERICAN.

The Scientific American is one of our oldest and best journals of general science. Articles appearing in it are carefully selected, and the subjects of the editorials are carefully chosen and well written. The circulation is large and the influence of the journal correspondingly great. It is, therefore, with pain that we read in the issue of November 2 an editorial entitled "A CARELESSLY GUARDED GATE", which is a severe arraignment of both the United States Public Health Service and the Medical Profession. We reproduce this editorial in another part of this number of Southwestern Medicine.

The officers of the Public Health Service on duty at our ports are certainly not careless and no one can question their ability. Patients had to be cared for and could not under the circumstances, be entirely excluded from landing. Probably every ship coming from England and France since the first part of July had at least one case of influenza on board, or had as carriers of the infection persons who had recovered from the disease before embarking, or had the organism in the throat and nose, but had not been ill. Even if all the active cases of the disease had been rigidly excluded, this epidemic would without doubt have occurred anyway, as there was no way of detecting carriers and preventing them from landing and going all over the country. The only way to have prevented this great epidemic was to have kept all individuals on every ship coming from Europe strictly on board and not to have allowed any communication between them and others on shore. This would probably have meant the inability to send any more men or supplies to Europe, with the grave consequences that would surely have followed. This same strict quarantine would also have had to be used against Canada.

In view of the wide publicity given the editorial in the Scientific American we feel that this publication should state explicitly in what way the Public Health Service failed in any part of its duty, whether or not it thinks that all cases of the disease and all carriers could have been excluded from landing and going all over the country, and give in detail the methods by which this could have been accomplished. We also feel that in all fairness to the Public Health Service and Medical Profession, the answer should appear in the Scientific American, and that an acknowledgement of error and retraction should be made. We hope that the Journal of the American Medical Association will not let this pass without comment.

—E. C. P.

SANITARY SURVEY OF MINES.

Mines are a very good location for the exchange between men working in them of certain diseases, especially those of the gastro-intestinal tract. It is remarkable that mines are not seriously infected more often than they are, as in some, at least, urine and faeces are passed indiscriminately in many parts of them. Intestinal parasitic infections are common in this region, and in addition many newly arrived Mexicans are being employed. These infections are not only responsible for men entering a company hospital, but render them more liable to other diseases, which adds both to the operating expenses of the company and reduces their efficiency and output when they are at work.

The examination and measures necessary to prevent the spread of such diseases in mines would take some time, work and expense, but would be more than repaid by the amount of work yielded by the men. This has been true in some of the southern states, where companies have paid the cost of malarial surveys and prevention work. The methods used in carrying out such a plan are well known, and can be done by men reasonably skilled in hygienic and laboratory work. Southwestern Medicine would like to publish the results of any such work undertaken.

—E. C. P.

BOOK REVIEWS

The Surgical Clinics of Chicago, Volume II, Number II, (April, 1918). Octavo of 208 pages, 79 illustrations, Philadelphia and London: W. B. Saunders Company. 1918 Published Bi-Monthly: Price per year: Paper $10.00: Cloth$14.00.

The April number contains a number of unusual cases that, however interesting they may be, are the kind that the ordinary physician sees only at long intervals. Profitable articles on the common subjects are rather conspicuous by their a bsence. Ochsner's method of packing the gall bladder with gauze might call for further trial.

The June number, however, is good. It contains several cases that grouped together, cover much of the important surgery of the upper abdomen,—renal stone, ureteral stones, gall stones, common duct stone, one thousand cases of gall bladder diseases summarized, obstruction from adhesions about gastro-enterostomy, a new gastrostomy, surgical diseases of the stomach and duodenum, illustrated by a series of cases. These articles contain many valuable points in differential diagnosis and treatment. There are profitable articles on flat-foot and chest injuries in civil life and war. The correct treatment for bunions is given, according to our idea. Interesting cases are tumor of the Gasserian ganglion with important differential diagnosis, and syphilitic pelvic exudate.

A chapter of thirty-five pages on eye, ear, nose and throat by Shambough is added treating mastoid and sinus infections chiefly.

Taken altogether this number is one o- the best surgical clinics yet published.
E. B. R.

Diseases of the Male Urethra. By Irvin S. Koll, M. D., Professor of Genito-Urinary Diseases, Post Graduate Medical School and Hospital, Chicago, Octavo of 151 pages, with 123 illustrations, several in colors. Philadelphia and London: W. B. Saunders Company, 1918. Cloth, $3.00 net.

The author in his foreword describes his book as a comprehensive monograph on diseases of the male urethra, including sexual impotence and sterility. It is a work of 150 pages, almost elementary in its nature, yet covering in clear and concise manner the important part of the field of acute and subacute diseases. The author avoids confusion by recommending usually but one line of treatment, evidently what he considers the best. The book is well illustrated especially as regards the picturing of findings with the urethrascope. The details of the more extensive treatment of chronic conditions, such as chronic prostatitis, are left to the larger works. It is essentially a book for the physician in general practice yet contains many hints worth while for the man who has a large venereal practice. While we may consider some of the biology of the genococcus rather mythical, on the other hand the chapter on sexual impotence should be read by everyone who practices in this line of work.
—E. B. R.

The Orthopedic Treatment of Gunshot Injuries, by Leo Mayer, M. D., Instructor in Orthopedic Surgery, New York Postgraduate Medical School and Hospital, with an introduction by Col. E. G. Brackett, M. C. N. A., Director of Military Orthopedic Surgery. 12mo of 250 pages, with 184 illustrations. Philadelphia and London: W. B. Saunders Company, 1918. Cloth $2.50 net.

Books that aid in the solution of orthopedic problems are now particularly timely and will so continue for some years after the war. Dr. Mayer has had a vast experience in this line of work and he has so arranged and classifed his knowledge that this small volume is in clinical value the equal of many a larger book. Concise, at times almost to the point of outline, he discusses a great variety of conditions that may be found in joint, nerve. tendon and bone injuries due to shot or shell when first seen at the front, and later as they are found in the base hospital or the reconstruction hospital. The author may be pardoned, perhaps, for giving a

The whole volume is full of good points and valuable suggestions. From the time rather disproportionate amount of space to operations that he himself has devised.
he woundt is first seen to the later questions of mechanical apppliances and prosthesis. At a time when the larger works have advanced so much in price it is pleasing to find a moderate priced work that contains so much reliable information at a time when itis needed.
—E. B. R.

Southwestern Medicine

Volume II El Paso, Texas, December, 1918 No. 12

VAGOTONIA.

BY
G. WERLEY, M. D., El Paso, Texas.

The vegetative nervous system has been much neglected. Its importance however is beginning to be appreciated. It controls the vital functions of the body and through it are expressed most of the symptoms of disease. The fact that through its functional derangement, symptoms similar to those caused by organic lesions may appear, leads to much confusion in diagnosis. A glance at the accompanying table will show what an array of symptoms may arise from these primitive nerves.

To understand the working of the vegetative nervous system, one must first comprehend that it consists of two kinds of nerves directly antagonistic to each other. They connect with the cerebrospinal nervous system in regions separate from each other. The term "sympathetic" is now only made to designate that portion of the vegetative system that connects with the dorsal and upper lumbar cord. The antagonist of the sympathetic is the extended vagus or autonomic nervous system. These latter nerves arise in three regions; 1— the mid-brain; 2—the medulla; 3—the lower lumbar cord.

The autonomics from the mid-brain accompany the third nerve and go to the ciliary ganglion, which supplies the muscle of accommodation, the sphincter of the pupil and also fibers which raise the upper lid, and probably others that have to do with converging the eyeballs.

II. The visceral fibers of the seventh cranial nerve arise from the medulla and intermediate nerve of Wrisberg (which is practically the anterior continuation of the ninth, tenth and eleventh cranial nerves), and give rise to the chorda tympani, which supplies the vasodilator nerves to the tongue, submaxillary and sublingual glands besides supplying secretory fibers to these glands. The preganglionic fibers to the sublingual and submaxillary glands end in the submaxillary ganglion.

The seventh cranial nerve also sends preganglionic visceral fibers

to the sphenopalatine ganglion, whence the postganglionic fibers run with branches of the fifth cranial nerve to supply secretory and possibly vasodilator fibers to the mucous membrane of the nose, soft palate and upper pharynx.

The visceral fibers of the ninth cranial nerve, namely, the otic ganglion, produce vasodilatation and secretion of the parotid gland. Also a few dilator fibers go to vessels at the back of the tongue.

The visceral fibers of the tenth and eleventh cranial nerves arise in the same column of cells as the seventh and ninth. Most of these fibers run in the vagus, and include motor fibers to the esophagus, stomach and small intestines as far as the ileocolic sphincter and inhibitory fibers to the heart and smooth muscle of the bronchial and gastric glands. The preganglionic fibers end in the jugular ganglia. (It has been shown that the ganglia of the trunk of the vagus is probably the cell station for afferent fibers in this nerve.)

III. The nervous erigens contains all the pelvic visceral fibers and is connected with the ganglia lying in the hypogastric plexus. It has the following functions:

1. Dilator to the vessels of the penis.
2. Motor to the bladder, colon and rectum.
3. Inhibitory to the sphincter of the bladder.
4. Inhibitory to the retractor penis.

The afferent fibers of the visceral nerves probably arise from the cells of the posterior spinal ganglia.

In general it may be said, according to Langley, that the supply of afferent fibers of the viscera is very small in portion to that of the outer surface of the body. For example, in the hypogastric nerve and also in the splanchnics, only about one-tenth of the medullated fibers are afferent. In the mouth, anus, lung and bladder, where both somatic and visceral innervation are represented, the afferent visceral supply becomes much greater in proportion; for instance, the pelvic visceral nerve contains about one-third afferent fibers.

Notwithstanding their afferent nerve-supply, ordinary stimulation of the viscera, such as handling, etc., produces no sensation of pain to the patient; but pathologic stimulation, such as stretching, compression and other effects of disease, is productive of pain which, as Head and Mackenzie have shown, is not referred to the diseased viscus, but is referred to certain parts of the cutaneous surface, hypersensitiveness of which localizes in large measure the position of the diseased viscus.—*After Wolfsohn.*

The chief drugs that stimulate the autonomic nerves are pylocarpine, eserine, muscarin, digitalis and pituitrin. The thyroid secretion stimulates both systems. Sometimes one division, sometimes another are acted upon selectively. Pilocarpine has the most general action. So far no internal secretion has been found that acts as a natural stimulant to the autonomic system comparable to the effect of epinephrin on the sympathetic. Atropine paralyzes the autonomics and thus causes overaction of the sympathetic.

Now what is vagotonia? Eppinger and Hess have tried to define a state of the autonomic vegetative nerves to which they have given this name. In such individuals these nerves are in a constant state of hyperexcitability. They overact and respond too readily to stimuli. The symptoms of such overaction may be found in the accompanying table.

Vagotonic Symptoms and Signs

1. Myosis.
2. Accommodation spasm.
3. Epiphora.
4. Hyperhidrosis.
5. Frequency of winking.
6. Salivation with constant spitting.
7. Hyperacidity of stomach contents.
8. Arrest of secretion of gastric glands (achylia).
9. Hypermotility of stomach and intestines.
10. Vomiting.
11. Diarrhea (8 to 10 times daily).
12. Spastic colon.
14. Biliary colic (inhibited by atropin).
16. Enophthalmos.
17. Bradycardia.
18. Low blood-pressure.
20. Pollakiuria.
22. Asthmatic attacks.
23. Esophagism.
24. Mucous colitis (analogue of bronchial asthma).
25. Gastrospams and pylorospasm.
27. Dermatographia.
28. Outspoken status thymicolympthaticus.
29. Gag-reflex almost absent.
30. Eosinophilia.
31. Pulsus irregularis respiratorius, which disappears with atropin.
32. Irregular breathing (disappears with atropin).
33. Clammy hands and feet.
34. Priapism.
35. Aschners' phenomenon produces slow pulse.
36. After atropin-pressure on eye-balls produces no
38. Increased carbohydrate slowing of pulse.
37. Increased fat tolerance. tolerance before and after epinephrin administration.
39. Pilocarpin causes extreme salivation.

Sympathicotonic Symptoms and Signs

1. Mydriasis.
2. Paralysis of accommodation.
3. Dryness of eyeballs.
4. Dryness of skin.
5. Infrequency of winking (Dalrymple's sign).
6. Dryness of mouth.
7. Low gastric acidity.
8. Increased gastric secretion (gastrosuccorrhea).
9. Lessened intestinal tonus.
11. Constipation.
13. Faulty convergence of eyes (Moebius' sign).
15. Wide eye-slits.
16. Exophthalmos.
17. Tachycardia.
18. High blood-pressure.
19. Vasoconstriction as seen in (a) peripheral anemias, (b) intermittent claudication, etc.
20. Relaxation of detrusor of bladder (incontinence).
21. Urticaria.
25. Atony of stomach.
26. Gastroptosis.
27. No dermatographia.
28. Tonsils small and atrophic.
29. Gag-reflex marked.
30. Eosinopenia.
32. Tachypnea with dyspnea (not affected by atropin).
33. Dry hands and feet.
35. Aschners' phenomenon produces no change in pulse.
37. Steatorrhea.
38. Lowered carbohydrate tolerance before and after epinephrin administration (i.e., epinephrin hypersensitiveness).
39. Pilocarpin causes no salivation.
40. Loewi test.

—After WOLFSOHN.

The following case illustrates the hyperexcitable state of the autonomics in vagotonia;—

Male. Age 27 years. One-fourth grain of pilocarpine administered by the mouth. In ten minutes there was agitated throbbing at the heart, sense of fullness in the frontal region and profuse salivation. Soon the whole body was bathed in perspiration which was less on the hands and feet. There was tremor and weakness with a great sense of relaxation. Vomiting was repeated several times and the bowels moved. Prostration lasted throughout the day. The submaxillary glands were swollen and tender. The patient had various "neurasthenic" symptoms, such as headache, poor digestion, cold hands and feet, and sexual irritability. (Original case.)

To be able to refer the state of such a patient definately to hyperactivity of the autonomic nerves is certainly nearer to a diagnosis than to throw his case into the scrap bag of "neurasthenia."

The vagotonic individual is born, not made. He is defective and reacts differently from the normal individual. Back of it all may lie some derangement of his internal secretions. A persistent thymus is common and eosinophilia is generally present. Often there is a history of tuberculosis or lues in the ancestors. Asthenia universalis congenita is generally but another name for vagotonia. A host of other ailments show vagotonic symptoms.

But not all of these individuals are not suffering from prostration. Only certain parts of the autonomic nervous system may be excessively irritable. So in some there may be eye symptoms, myopia or eye strain; others may have an irregular pulse. Sinus arrythmia and premature beats, mock angina or a slow heart may result from overaction of the vagus. Or again our glass stomach or pyloric stenosis may be simulated by a too active vagus. Spastic states of the gall-bladder or bowels may cause symptoms of organic disease and lead to operation for gallstones or Lane's kink. Such mistakes may be avoided by searching for the signs and stigmata of vagotonia. In this brief review it is impossible to touch upon more than just a few points. Those who would pursue the subject further are referred to "Vagotonia" by Eppinger and Hess, and Wolfsohn's articles in the Journal of the A. M. A., for May 16, 1914. Tests for vagotonia from Wolfsohn's paper are appended.

IV. The following tests are used in the physiologic and pharmacodynamic studies:

1. *Loewi's Test.*—From 2 to 3 drops of a 1:1,000 epinephrin solution, instilled into the eye of a normal person, produces vasoconstriction but no pupillary dilatation. In some forms of hyperthyroidism, especially with lowering of autonomic sensibility, a pupillary dilatation occurs. This is also produced in pancreatic diabetes, that is, hypersusceptibility of pupils to epinephrin.

2. *Aschner's Phenomenon.*—Pressure on the eyeballs for from one-half to one minute produces no change of pulse in normal persons. When vagotonia exists there is a rather sudden slowing of the pulse with this procedure. (This effect is caused by pressure on the eyeballs stimulating the trigeminus and reflexly the vagus, stimulation of which causes bradycardia and stoppage of respiration in the expiratory phase.)

3. *Pilocarpin Test.*—Pilocarpin, 1/10 grain (hypodermically), causes extreme salivation and bronchial secretion in vagotonia. No salivation is noted in sympathicotonia.

4. *Fat Tolerance.*—The normal fat tolerance is from 100 to 150 gm. in twenty-four hours. The patient is given 200 gm. of butter, with meals, to be eaten in twenty-four hours. The stools are saved and examined for fat for forty-eight hours following. Fat-free stools indicate a vagotonic condition. Marked steatorrhea indicates a sympathicotonia.

5. *Carbohydrate Tolerance.*—Normally 100 gm. of glucose can be taken on a fasting stomach without a resulting glycosuria. In sympathicotonia a spontaneous glycosuria is produced, whereas an increased tolerance for glucose is present in vagotonia. The test is performed in the following manner.

On the fasting stomach 100 gm. of glucose with 400 c.c. of water are given at 6 a. m. The patient immediately urinates and hourly thereafter for five hours. The specimens are to be saved separately and examined for glucose. The first specimen is used as a control. The tolerance for carbohydrates can be determined then by increasing or decreasing the amount of glucose at each test until a faint reduction to Fehling's solution is produced.

6. *Epinephrin Hypersentitiveness.*—One hundred gm. of glucose by mouth and 1 mg. of epinephrin hypodermically are given from a quarter to half an hour later, and the carbohydrate tolerance test, just described, followed out.

In vagotonia no glycosuria is produced by this procedure. In sympathicotonia about 6 gm. of glucose are excreted in the urine in five hours.

7. *Pulsus Irregularis Respiratorius (Hering).*—On deep inspiration and on expiration only slight normal physiologic difference is noted in the rate and size of the pulse. In vagotonic states, inspiration causes increase in the rate of the pulse and decrease in the size; expiration causes slower pulse and increase in size (best shown by tracings.)

8. *Dermatographism.*— A. After blushing (Polonski) produced by rubbing the skin, pathognomic of loss of equilibrium in the vegetative nervous system, probably deficient sympathetic tonus.

B. "Perverse reaction" (Hess and Konigstein).

Rubbing the skin produces stimulation of the pilomotor fibers and vasoconstriction, that is, sympathicotonia. Patients in this group usually have pallor of the face which gets paler under psychic stimuli (whereas the normal result should be blushing).

REVIEWS

A ROENTGENOLOGICAL MANUAL FOR CHEST EXAMINATION

Dunham, Kennon: A Manual of the Roentgenological Examination of the Chest, American Review of Tuberculosis, 1918, Vol. 2, No. 9.

Believing that no chest examination is complete without the help that the x-ray can give us and with the view of taking a step toward standardizing the technique of such examinations, Kennon Dunham, of Cincinnati, summarises methods of procedure which he has found to be of most value and which he believes necessary to proper x-ray work on the chest. His purpose is to accurately describe the technique which he has selected as giving best a definite norm, with which the record of pathological densities may be compared; and, further, to point out a few proved pathological causes of certain abnormal densities. An examination should consist either of the fluoroscopic or stereoscopic method. The single plate adds practically nothing to the fluoroscope, as it has the disadvantage of not being able to show motion or to permit the examination of the chest from various angles. The stereoscopic method has the unique advantage of definitely locating the lesion with regard to its three positions in the thorax, and allows a detailed study of the character and distribution of the abnormal density. With the fluoroscope the extent of the diaphragmatic excursion should always be noted. Diaphragmatic adhesions can best be studied by this method. The usual line above a pleural effusion is concave, but pleural effusion may be so encapsulated that it is held in abnormal positions, even perpendicularly along the chest wall. The line above hydro-pneumothorax, when the patient is in the upright position, is always horizontal. The bright area of decreased density above may be somewhat obscure if the lung is collapsed toward the anterior or the posterior wall rather than toward the spine. Thus the value of observing the patient from various angles is apparent. The line above a pleural effusion associated with lung tumor is usually convex. Upon change of position the line above hydro-pneumothorax moves freely; that above pleural effusion does not move, while the above diffusion associated with lung tumor and transudates moves slowly. In stereoscopic examinations the shortest possible exposure giving good detail is the best. Six seconds is the maximum time allowed from the beginning of the first to the end of the second exposure. Longer exposures produce a fuzzing of the linear markings, which simulate early tuberculosis. Do not allow breathing between exposures. Should patient be very short of breath, administer oxygen. Exposures should be made with the lungs moderately well filled. The sitting position is the position

of choice, and the plate should be in front of the patient. The arms should drop with hands in the lap, elbows turned out, for this throws the scapula to either side of the thorax. The patient should be held firmly to the plate. The author goes on to describe in detail the particular parts of the chest to which attention should be paid. He divides each side of the thorax into several parts and tells what structures are to be noted and what are their normal shadows in each part.

The characteristic tuberculosis plate marking consists of a fan-shaped density with the base of the triangle toward and near the pleura, the apex toward the hilum and connected to the hilum with a heavy trunk. If we have two or more such areas of differing densities we have a picture pathognomonic of tuberculosis, since tuberculosis is a disease of successive infections. The greatest density indicates the oldest lesion. The pathological lesion within the lung which causes this fan-shaped density on the plate is a cone with its base to the pleura and its apex toward the hilum. The density within this fan-like area varies greatly. The radiating linear markings may either be interwoven, broadened, studded, obscured by filmy cloud effect, mottled, matted together or entirely blotted out. Striking characteristics of the tuberculous picture are the varying degree of change in the different trunk groups, in contrast to the general homogeneous change in diseases which might simulate tuberculosis, and the lack of continuity with which the trunks may be involved. Thus we may have only the vertebral and second interspace trunks of an upper lobe involved leaving the first interspace trunk clear. Further it is very striking to note the constancy with which early or slight lesions in the adult are limited to the trunks of the upper lobes.

If the fine linear markings of a given trunk are fuzzy or are faintly obscured by a cloud effect and the fan appears to be wide open, active tuberculosis is suggested. On the other hand, if the linear markings in a limited area are sharply defined and dense and show cleancut studding beyond the trunks and the fan is partially closed, a healed lesion is suggested. This condition is emphasized if it is accompanied with heavy, coarse interweavings which reach to or near the periphery. The heavy trunks between such areas and the hilum are usually broad and dense.

Miliary tuberculosis produces a very striking picture. The lung fields are studded with fine dots of increased density, which may be discreet or confluent. The density of these areas varies from the faintest cloud to brilliant spots produced only by calcification. This differs from the common form of tuberculosis in the fact that its roentgen plate strongly suggests, but does not definitely diagnose, tuberculosis. Anthracosis simulates the calcified variety of miliary tuberculosis. It has the same distribution of studdings, but each density is more stellate, larger, sharper and thicker. Carcinoma sometimes simulates the uncalci-

fied tubercle. When the age, history and symptoms are considered in conjunction with the plate, there is usually little doubt as to the diagnosis.

Caseous bronchopneumonia produces a definite, heavy, flocculent density. It is not usually seen in the apices, but in the more dependent parts of the lung. Its position and appearance suggest that it is the result of aspiration. The fan may or may not be in evidence. If a small lesion near the pleura is involved this will be walled off by heavy septa and the flocculent densities will appear just beyond a trunk of increased density. Then it will have the triangular shape of the fan, but the sticks of the fan will not be in evidence. When there is a large lesion, it is often impossible to make out from the plates the individual triangles. When such a condition exists at the base there is usually evidence of an old lesion at the apices, and frequently there is a cavity.

Besides tuberculosis the author takes up a number of other pulmonary conditions which may give more or less the same shadows and differentiates these from those produced by tuberculosis.

DIAGNOSTIC STANDARDS OF TUBERCULOUS CERVICAL ADENITIS

Standards of Diagnosis and Treatment of Tuberculous Cervical Adenitis: as issued by the Community Health and Tuberculosis Demonstration of the National Tuberculosis Association, Framingham, Mass., in a pamphlet "Standards for the Diagnosis, Classification and Treatment of Pulmonary and Glandular Tuberculosis in Children and Adults," Third Edition, September 1918. American Review of Tuberculosis, 1918, Vol. 2, No. 9.

The present standards are included in that portion of the work relating to the standards of diagnosis and treatment of cervical adenitis that is to be found in the third edition of the pamphlet on Diagnostic Standards recently issued by the Framingham Community Health and Tuberculosis Demonstration. These standards will undoubtedly repay careful reading by every physician. In a foreword to the third edition, the pamphlet states that it is recognized that diagnostic standards can never be completely satisfactory for almost inevitably they are either antagonistically dogmatic or qualified to the point of futility. Consequently, these standards are presented with some trepidation, and aim merely to assist the physician to an appreciation of obscure tuberculous lesions.

Under the heading Diagnosis the standards are grouped with reference to the following considerations:

1. Enlargement of the cervical glands.
2. Exposure.
3. Other causes of enlarged cervical glands.

4. Constitutional signs and symptoms when the cervical glands are enlarged.

5. Duration of enlarged glands.

6. The relation of diseased tonsils and carious teeth to enlarged cervical glands.

7. Pathological examination.

8. Confirmatory evidence.

Striking points put forward are: That any well-marked enlargement of the cervical glands that persist for several months after throat and mouth infections have been relieved should be considered tuberculous. That a history of exposure giving enlarged cervical glands should have its due weight in diagnosis. That enlarged glands being present, constitutional signs and symptoms such as sub-standard strength, size, and endurance of a patient, and anemia, malnutrition, fever, etc., should suggest the possibility of a diagnosis of tuberculosis. That in general tuberculosis should not be considered unless the enlargement persists for several months following elimination of other possible causes, such as diseased tonsils, carious teeth, etc. That a number of acute and chronic non-tuberculous conditions can arouse more or less permanent enlargement of the glands. That in case of any doubt as to diagnosis it is well to remove a gland and submit it to pathological examination. Tonsils and adenoids that have been removed should be examined for tuberculosis histologically and by animal inoculation. If these are found to be tuberculous it is wise to conclude that they are likewise tuberculosis. Confirmatory evidence may be had by tuberculin slide tests and by the x-ray, and manifest tuberculous conditions in other parts of the body.

The article concludes by laying down several well-recognized general principles in the treatment of tuberculous cervical adenitis.

EFFECT OF LEMON JUICE IN PELLAGRA.

BY

J. N. ROUSSEL, M. D., New Orleans; in N. O. Medical and Surgical for December, 1918. Review by Editor.

"The juice of 3 or 4 lemons will simply work wonders in a pellagrin." "I began administering lemon juice to all cases of pellagra, and they proceeded to get well in about two weeks." The whole juice of the lemon is necessary; citric acid alone will not do it. Orange juice is not as beneficial as lemon juice. "We should expect satisfactory results in patients not yet bedridden.—In these cases I would not expect lemon juice or anything else to be of much benefit."

CORRESPONDENCE

VENEREAL PROPHYLAXIS

Extract from Telegram to Governors from Newton D. Baker, Secretary of War.

November 13, 1918.

"Signing of armistice in no way lessens responsibility of civil communities for protection of soldiers from prostitution and sale of liquor. Our states and cities ought never to lose the control which has been established or stop so vital a work.....War Department is determined to return soldiers to their families and to civil life uncontaminated by disease.

Extract from letter to Civil Authorities from W. G. McAdoo, in behalf of the United States Public Health Service.

November 20, 1918.

"Under the protection of the military authorities four million soldiers and sailors have received greater protection against veneral diseases than they received before the war in civil life. The cities and towns through which they go and to which they will return upon demobilization must be made safe. The fight.....must be vigorously continued."

Extract from Statement by Josephus Daniels, Secretary of the Navy:

November 20, 1918.

"One of the compensations for the tragedy of war is the fact that an enlightened opinion is behind the organized campaign to protect the youth against veneral disease. The campaign begun in war to insure the military fitness of men for fighting is quite as necessary to save men for civil efficiency."

Your whole community will be at the station "when the boys come marching home." You are planning to *honor* these men with parades and celebrations of all kinds. Are you making sure that the profiteers of vice are not planning to take advantage of the days of festivity to *dishonor* them before they get settled again in the normal ways of life? Are you sure that *demobilization* will not mean *demoralization?*

When men and girls are changing their occupations and breaking with old ways of life, when war disciplines are being removed and when spirits are buoyant, the greatest temptations to self indulgence occur. Cities and towns throughout the country face now the most important crisis—the biggest emergency yet encountered in the fight against veneral diseases.

WHAT THE WAR TAUGHT

Before the war most physicians and public health officers knew that gonorrhea was every year causing thousands of cases of blindness

among infants, countless surgical operations on women, and sterility in both men and women; that syphilis was being transmitted to offspring causing physical and mental defectives, that it was a prolific cause of locomotor ataxia, paralysis, paresis or softening of the brain, insanity, miscarriages, diseases of the heart, blood vessels and vital organs. But people generally did not know these things and few remedial measures were taken. The war opened our eyes. The reports of draft boards and camp surgeons revealed, for the first time, clearly, the menacing seriousness of the veneral problem and the failure of our pre-war attitude toward the whole question.

THE AMERICAN WAR PROGRAM

Europe, for the first year of war, evaded the problem and suffered terribly in incapacities at the front and sickness behind the lines. Our military authorities threw aside evasion and prudery and attacked venereal diseases directly. The old shams and fakes about the "sex necessity" and the need of licentious pleasure were thrown into the discard. From first to last the Government maintained the position accepted by the best medical authority: viz., that continence is entirely compatible with health, and that irregular sex intercourse with prostitutes is the most prolific cause of venereal disease. The denizens of the underworld were driven out of the zones around each army camp and naval station; all the men in camps were given extensive instruction; those exposed and infected were given prompt treatment; and various co-operating agencies furnished interesting, wholesome recreation.

This program brought results. The venereal rate was lowered below that of any army of any nation in the history of the world. The war showed America not only the prevalence and seriousness of venereal diseases; it showed how and where to attack and conquer them.

VENERAL DISEASES A PEACE PROBLEM

The examinations of draftees showed that five men came into the army with venereal disease to every one who contracted it after he was in the army. And the one who contracted it in the army, probably was infected in a civil community near camp over which civil authorities had control.

Venereal disease, then, is not to be attacked as a war epidemic, but as a civilian problem and a peace problem. The *protection* of the returning soldiers and sailors is *your immediate responsibility.*

Is your city accepting its reconstruction task?

What can you do?

I.

You Can keep Your Red-Light District Closed and Suppress Com-

mercialized Prostitutions of all Kinds. If your city or town still tolerates a so-called segregated district your first job is to close it. As a method of controlling vice the "red-light" district never had a sound leg to stand on: now the war has removed its last crutch. The military authorities, who sought only clean men for fighting, condemned it unqualifiedly; vice commissions in over fifty cities have condemned it after complete investigation; and experience in Europe shows plainly that the regulation and medical examination furnished are a farce.

The hasty examination given most prostitutes often does not reveal existing disease or prevent infection the next hour after examination. A segregated district does not segregate all prostitutes— only those unfortunate women with the least personal attractiveness and the most diseased bodies. It creates a public, official market for the selling of disease to customers from everywhere, aided often by the false medical guarantee that no disease exists. It does not segregate vice; a large part of it goes on clandestinely out of bounds. It surely does not segregate disease.

When the military zones are removed from federal control there will be pressure brought to bear to re-open the segregated district, or to wink at clandestine vice which has been rigidly suppressed under military order. But if prostitutes carried disease last week, they carry it next week. In war or peace the segregated district is a synonym for crime, venereal disease and needless waste of human life.

Abolishing the red-light district is not the end of the clean-up of the community. Boarding houses, assignation houses, cafes, dance halls, massage parlors, amusement parks, and for-hire automobiles are the refuges of clandestine prostitution. They must all be watched and watched continuously. Legislation is needed in some cases to control these places. What is effective is not a spectacular raid now and then but constant vigilance on the part of public officers and citizen associations. Each attack on prostitution, by driving it more and more to cover, reduces the number of individual exposures to venereal diseases.

Such a program of suppression often causes some sentimental or ignorant persons to rise up and say: "you are fanatical", "you are hounding the poor unfortunate prostitute", or " the lid ought to be tipped up a little so that everybody can have a good time and so that business will be better." These are absurdities. Prostitutes themselves, after they have had a glimpse of decent life in a detention home, say, that "there is no greater wrong you can do a girl than to allow her to remain a prostitute." Only in trashy novels and "movies" is the prostitute's life a rosy one. In reality, to quote her own words, "it is hell". What kind of good time can you create for recreation-loving men and women by "tipping up the lid?" It may be a gay time for a night, perhaps, and then

mornings-after and months-after of disaster and disease. An open town will mean more business for some doctors, hospitals, and undertakers. It means prosperity for the pimps and landlords who live on the earnings of these women. But for legitimate business, it means higher taxes, lowered efficiency, less buying power—an infinitely poorer community.

II.

You Can Provide for Easily Accessible and Prompt Treatment of Venereal Diseases. Diseased prostitutes are the most dangerous carriers. They must be quarantined and the community safeguard against their return as prostitutes, first, by means of permanent segregation of the feeble-minded and, second, by medical treatment and industrial education for the others.

Hospitals should be persuaded to admit venereal cases so that the number of carriers at large will be miminized.

Clinics handling venereal cases should establish in population centers. This is now rapidly being done by the state boards of health and United States Public Health Service co-operating.

Quacks should be put out of business by advertising agencies and others. The best druggist are joining in the movement inaugurated by the United States Public Health Service, to refuse to sell venereal disease nostrums and to refer enquirers to reliable physicians or clinics.

All cases of venereal disease should be made reportable by name or number to boards of health. Patients who refuse to follow prescribed regulations to prevent exposing others to the disease should be put in quarantine. A majority of states already have laws or health regulations with such provisions. They are as necessary in fighting venereal disease as in combatting any other contagious disease.

III.

You can Educate People With Regard to Venereal Diseases and Sex Matters. In army camps this proved to be a very important part of the venereal disease prevention program. Thousands of personal instances testify to the large part that ignorance has to play in the downfall of girls and infection of men. Get in touch with your state board of health and co-operate in their educational campaign.

IV.

You Can Provide Wholesome Recreation for All. In the army camp the soldier's life was filled with hard work and interesting healthy diversion. This proved an important factor in preventing patronage of vicious amusements. All young men and girls need companionship, ex-

citement and recreation. The contemptible profiteers of vice exploit this natural desire. Outdoor play and sports, attractive lounging places, open houses and clubs, organized athletics, gymnasiums, reading rooms, fraternal activities, community singing, good theaters at reasonable prices, well supervised dancing; these are the successful and effective substitutes for the saloon and brothel.

RECONSTRUCTION

With war's end, many war buildings, war jobs and institutions will go to the scrap heap. But every item in the program of venereal disease control is as necessary to successful peace as to successful war. Don't scrap your patriotism and community spirit in this matter. Make your blows knockouts against vice.

There should be no peace with prostitution, no truce with the red-light district, no armistice with venereal diseases.

Unconditional surrender is the Government's demand from this enemy at home.

HISTORY OF MEDICINE IN MEXICO.

(From Gaceta Medico de Mexico. July-Dec., 1916. No. 7-12. Pub. Sept., 1918 Reviewed in Jour. A. M. M., Nov. 23, 1918.)

History of Medicine in Mexico.—Leon's data refer to the period after the university had been founded in 1553 and a medical department organized in 1582. The various documents, theses, etc., have been mostly preserved, and they throw light among other things on the American origin of syphilis. This is sustained by the sudden introduction of descriptions of syphilis into the medical literature at the close of the fifteenth century. There is no proof, however, that the syphilitic lesions found in ancient bones in America date from before Columbus' day. On account of the humidity in Mexico, very few prehistoric bones are found there, and as the burial places have been used for centuries since then, it is impossible to set any date for them. The same may be said of the descriptions of syphilitic lesions in the early Spanish writings in Mexico. The main work of one of these early Spanish writers, Juan de Cardenas, dated 1591, has recently been republished by the Museo Nacional of Mexico. He says of syphilis that nowhere in the world are its ravages so common or so severe as "in the Indias," meaning Mexico. . . . "It reigns there as if it were the fruit of the soil." He adds, "The nature of this contagious **mal de las bubas** is unknown, but it is not a modern disease. It is new to Europe, but I imagine that the Indians here have had it ever since they occupied the country, as it seems to be inherent in the land here on the account of the heat and humidity." . . . "The Indians say that a man without some trace of this disease is not an honest man. It is so common here that the absence of bones in the face scarcely attracts a glance. The Inquisition was introduced into Mexico in 1571 and all books brought into the country had to be registered, and the shadow cast by the Inquisition checked the progress of medical science both in Old and New Spain. In 1592 the viceroy of Mexico complained to the king of Spain that "so many useless emigrants were sent out from Spain, **medicos y literatos**, when the demand was for **agricultores e industriales.**" Cortez founded a hospital in 1524, placing it in charge of a religious brotherhood, and the early foundation of more than thirty-six others is mentioned.